
तार की रस्सियों के लिए छल्ले — विशिष्टि
(दूसरा पुनरीक्षण)

Thimbles for Wire Ropes —
Specification
(Second Revision)

ICS 53.020.30

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FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Wire Ropes and Wire Products Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard was first published in 1963 and subsequently revised in 1978. This standard is being revised again to keep pace with the latest technological developments and international practices. Also, in this revision, the standard has been brought into latest style and format of Indian Standards, and references to Indian Standards, wherever applicable have been updated. BIS certification marking clause has been modified to align with the revised *Bureau of Indian Standards Act, 2016*.

The composition of the committee responsible for the formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded-off value should be the same as that of the specified value in this standard.

*Indian Standard***THIMBLES FOR WIRE ROPES — SPECIFICATION***(Second Revision)***1 SCOPE**

Lays down the requirements for ordinary, reeving, solid, and open types thimbles for wire ropes.

2 REFERENCES

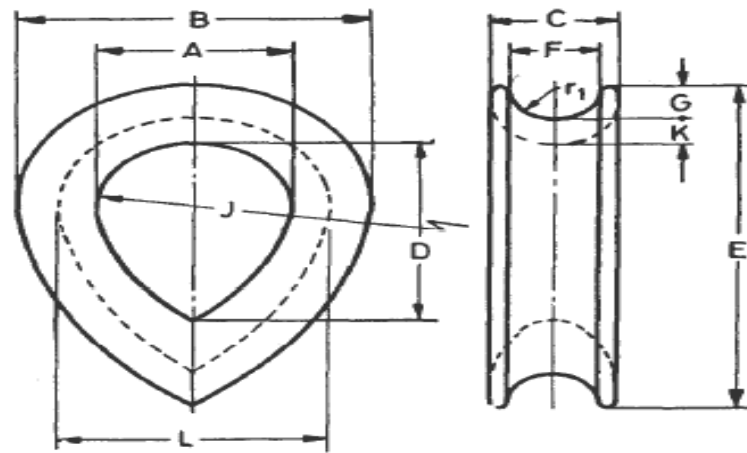
The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. In case the standards are to be referred in this clause they are to be listed as follows:

<i>IS No.</i>	<i>Title</i>
IS 1030 : 1998	Carbon steel castings for general engineering purposes — Specification (<i>fifth revision</i>)
IS 1875 : 1992	Carbon steel billets, blooms, slabs and bars for forgings — Specification (<i>fifth revision</i>)
IS 2062 : 2011	Hot rolled medium and high tensile structural steel — Specification (<i>seventh revision</i>)
IS 2633 : 1986	Method for testing uniformity of coating on zinc coated articles (<i>second revision</i>)
IS 6745 : 1972	Methods for determination of mass of zinc coating on zinc coated iron and steel articles
IS 14329 : 1995	Malleable iron castings — Specification

IS 209 : 1992 Specification for zinc (*fourth revision*)

3 DIMENSIONS

3.1 Ordinary Thimbles

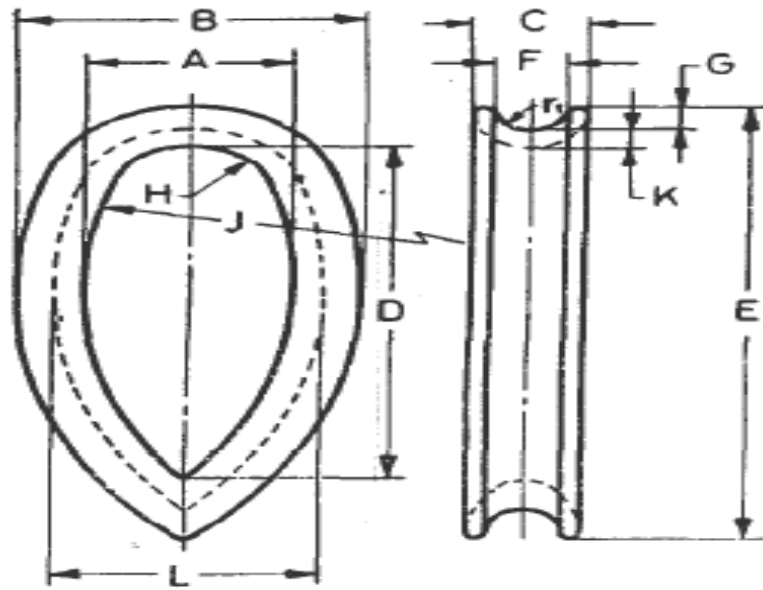


All dimensions in millimetres.

Nominal Size of Rope	A	B	C* Min	D	E	F* Min	G	r_1	J Approx	K	L
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
8	22	38	13	34	54	9	4	4.4	62	4	30
10	24	46	15	38	64	11	6	5.5	76	5	34
12	32	60	19	44	80	13	8	6.6	90	6	44
14	32	60	21	44	80	15	8	7.7	90	6	44
16	40	72	23	58	98	17	8	8.8	114	8	56
18	44	80	29	66	110	19	10	9.9	125	8	60
20	50	94	31	74	124	21	12	11.0	150	10	70
22	58	102	34	82	134	24	12	12.1	165	10	78
24	64	108	36	92	150	26	12	13.2	176	10	84
25	70	118	37	108	162	27	14	13.75	200	10	90
29	76	132	41	112	176	31	16	15.95	230	12	100
32	96	152	44	134	196	34	16	19.2	250	12	120
35	104	174	48	152	228	38	19	21.0	300	16	136
38	114	198	54	165	254	41	24	22.8	330	18	150
41	114	198	56	165	254	44	24	24.6	330	18	150
44	125	222	57	178	285	47	26	26.4	355	25	175
48	134	246	67	190	315	51	28	28.8	380	28	190
51	140	256	70	200	330	55	30	30.6	400	28	196
54	140	256	70	200	330	58	30	32.4	400	28	198
57	146	270	76	216	35	61	32	34.2	425	30	206
64	156	308	95	240	400	69	44	38.4	450	32	220
70	200	400	120	275	500	75	60	45.0	480	40	280

NOTE — For wire ropes of intermediate sizes, the next larger size of thimble shall be used.

*These dimensions are minimum for thimbles of nominal sizes up to and including 41 only.

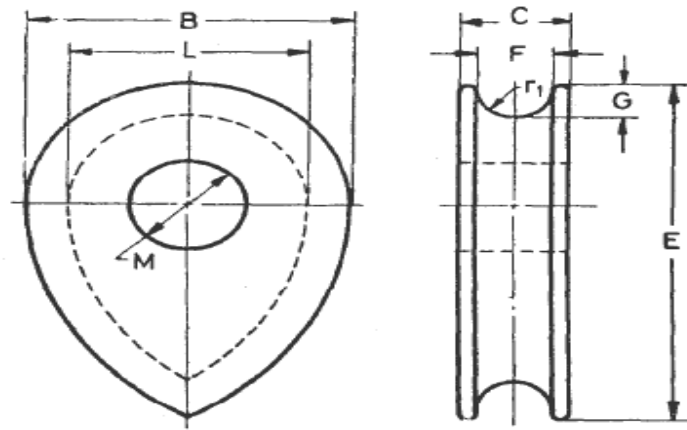


All dimensions in millimetres.

Nominal Size of Rope	A	B	C	D	E	F	G	r_1	H	J	K	L
											Min	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
16	50	82	28	130	170	17	8	8.8	20	112	8	66
20	64	108	32	158	210	21	12	11.0	25	130	10	84
24	75	123	35	186	245	26	14	13.2	32	150	10	95
25	75	123	36	186	245	27	14	13.75	32	150	10	95
29	88	144	42	212	285	31	16	15.95	38	175	12	112
32	100	172	48	235	315	34	20	19.20	44	195	16	132
35	114	198	54	265	350	38	24	21.0	50	210	18	150
38	125	213	64	300	400	41	24	22.8	50	235	20	165

NOTE — For wire ropes of intermediate sizes, the next larger size of thimble shall be used.

3.3 Solid Thimbles



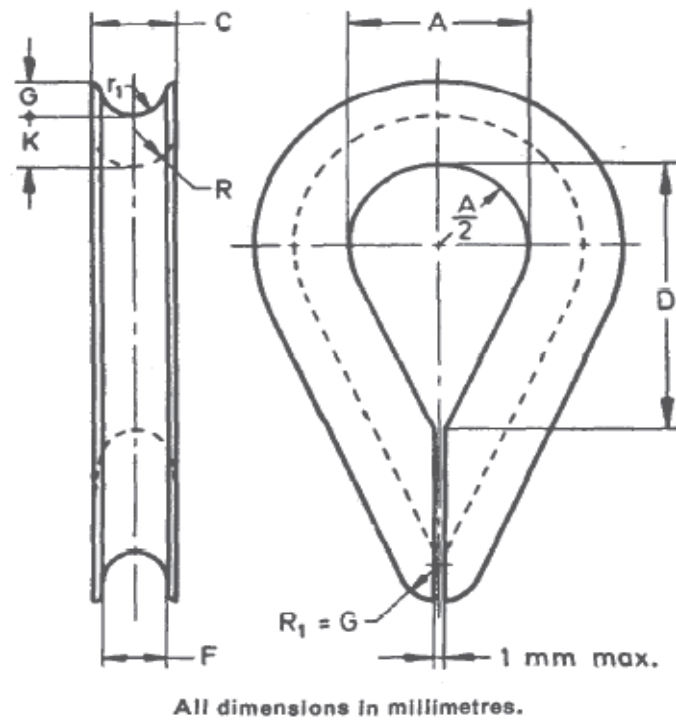
All dimensions in millimetres.

<i>Nominal Size of Rope</i>	<i>B</i>	<i>C</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>r₁</i>	<i>L</i>	<i>M*</i>
				<i>Min</i>				<i>Max</i>
<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>	<i>(6)</i>	<i>(7)</i>	<i>(8)</i>	<i>(9)</i>
8	33	11	45	9	4	4.4	25	12
10	44	15	56	11	6	5.5	32	15
12	60	20	82	13	8	6.6	44	22
14	60	21	82	15	8	7.7	44	22
16	70	23	94	17	10	8.8	50	25
18	80	26	104	19	12	9.9	56	28
20	88	28	116	21	12	11.0	64	32
22	100	30	125	24	14	12.1	72	34
24	104	33	140	26	14	13.2	76	38
25	114	36	150	27	16	13.75	82	42
29	124	39	165	31	18	15.95	88	44
32	140	45	190	34	20	19.2	100	50
35	154	50	208	38	20	21.0	114	56
38	169	56	234	41	22	22.8	125	64
41	169	56	234	44	22	24.5	125	64
44	190	65	260	47	25	26.4	140	68
48	206	67	275	51	28	28.8	150	75
51	229	72	300	55	32	30.6	165	78
54	229	76	300	58	32	32.4	165	78
57	243	78	330	61	34	34.2	175	88
64	276	88	375	69	38	38.4	200	100

NOTE — For wire ropes of intermediate sizes, the next larger size of thimbles shall be used.

*Dimension M is the standard pin-hole and the largest pin-hole for each thimble. Should a smaller pin-hole be required, the diameter of this shall be stated in the inquiry and order.

3.4 Open-Type Thimbles



<i>Nominal Size of Rope</i>	<i>A</i>	<i>C</i>	<i>D</i>	<i>F</i>	<i>G</i>	<i>K</i>	<i>r₁</i>	<i>R</i>
				<i>Min</i>				
<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>	<i>(6)</i>	<i>(7)</i>	<i>(8)</i>	<i>(9)</i>
8	27	13	45	9	5	7	4.4	6.7
10	30	15	50	11	7	8	5.5	7.5
12	35	17	58	18	8	11	6.6	8.5
14	41	19	68	15	9	12	7.7	9.5
16	46	22	77	17	10	13	8.8	11.0
18	52	25	86	19	11	15	9.9	12.5
20	57	27	95	22	12	16	11.0	13.5
22	64	31	106	24	14	18	12.1	15.5
24	73	36	122	26	16	21	13.2	18.0
25	73	36	122	27	16	21	13.75	18.0
29	82	39	135	31	17	23	15.95	19.5
32	92	43	152	34	19	26	19.2	21.5
35	98	46	162	38	21	28	21.0	23.0
38	110	52	185	41	23	32	22.8	26.0
41	124	57	208	44	26	36	24.6	28.5
44	124	57	208	47	26	36	26.4	28.5
48	138	62	230	51	29	40	28.8	31.0
51	148	66	248	55	31	43	30.6	33.0
54	162	70	270	58	34	46	32.4	35.0
57	162	70	270	61	34	46	34.2	35.0
64	190	78	315	69	39	52	38.4	39.0

NOTE — For wire ropes of intermediate size, the next larger size of thimble shall be used.

4 TOLERANCES

4.1 Tolerances on untoleranced dimensions shall be ± 5 percent.

4.2 The dimensions indicated as minimum shall be subject only to a tolerance of + 5 percent (dimensions C and F); and to +10 percent (dimension K).

4.3 The pin-holes in solid thimbles shall be drilled from the solid or bored to finished sizes to suit machined pins of the sizes specified (dimensions M of 3.3).

4.3.1 The plus tolerance on the pin-holes shall be as follows:

<i>Nominal Size (Diameter of Rope)</i> mm	<i>Tolerance</i> mm
8 up to and including 16	+ 0.13
Over 16 up to and including 32	+ 0.25
Over 32	+ 0.38

5 MATERIAL

<i>Type</i>	<i>Material</i>
a) Ordinary and reeving thimbles	Rolled steel bars, complying with IS 2062 or steel to designation 20C8 of IS 1875.
b) Solid thimbles:	Steel castings to Grade 280-520 W of IS 1030 or malleable
1) For ropes up to and including 38 mm	Iron castings to specification of IS 14329 or IS 1875.
2) For ropes over 38 mm	Steel casting to Grade 280-520 W of IS 1030 and IS 1875
c) Open-type thimbles	Plates conforming to IS 2062.

6 GENERAL REQUIREMENTS

6.1 Boss and Lightening Hole in Solid Thimbles

6.1.1 Solid thimbles may be provided with a projecting circular boss on each face, and if so provided the faces of such bosses shall be machined and the thimbles shall conform in all other respects to the dimensions specified in

6.1.2 Solid thimbles for ropes over 38 mm diameter may be made with a lightening hole or recess

towards the point of the thimble of such size and/or design that the strength of the thimble is not impaired.

6.2 Condition and Galvanizing

6.2.1 Ordinary, Reeving and Open-Type Thimbles

Unless otherwise specified by the purchaser, ordinary, reeving and open-type thimbles shall be galvanized. The galvanizing shall be carried out by the 'hot-dip process' and shall consist of a continuous coating of zinc of a purity of not less than 98.5 percent according to IS 209. The tolerance specified in 3 shall apply after galvanizing.

6.2.2 Solid Thimbles

Unless otherwise specified by the purchaser, solid thimbles shall not be galvanized.

6.3 Workmanship

The thimbles shall be free from roughness and sharp edges liable to injure the wire rope.

6.4 Freedom from Defects

Each thimble shall be carefully examined by a competent person and shall be deemed to comply with this standard only if found free from flaw or defect.

7 USAGE

Details about the usage of various types of thimbles are given in Annex A.

8 DESIGNATION

8.1 The designation of the thimbles shall include:

- The type - Ordinary (O), Reeving (R), Solid (S), or Open-Type (OT);
- The method of manufacture - Forged (F) or Cast (C);
- The anti-corrosive coating - Galvanized (G) or Not Galvanized (NG);
- The diameter in mm of the wire rope for which it is suitable; and
- The number of this standard.

Example:

A thimble of the open type, which is forged, galvanized by the hot-dip process, suitable for a wire rope of 20 mm diameter shall be designated as:

Thimble OT $\times$ F $\times$ G $\times$ 20 $\times$ IS 2315

9 TEST

9.1 When specified by the purchaser, samples of each, thimble shall be tested in accordance with IS 2633 and IS 6745. The purchaser shall state clearly at the time of the enquiry and order whether he requires zinc coating to be tested, the number of samples he requires to be tested, the number of dips the sample has to be subjected to, and the mass of the zinc coating.

NOTE — It is recommended shall that not more than one sample of each size of thimble per consignment should normally be subjected to this test.

10 MARKING

The thimbles shall be legibly marked with the nominal size at a convenient place on the front face.

10.1 BIS Certification Marking

The thimbles may be marked with Standard Mark.

10.1.1 The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

ANNEX A (Clause 7)

USAGE OF VARIOUS TYPES OF THIMBLES

A-1 The thimbles specified in this standard are intended for (a) wire ropes, subject to a live load, as used for cranes and lifts; and (b) wire rope slings and similar general engineering and marine purposes. The proportions and dimensions of the specified thimbles have been related to the working strength of the single part of the rope, and the strength and rigidity essential for such purposes.

A-2 The grooves on all thimbles, except for sizes larger than 41 mm (*see 3.1*) are suitable for bare, that is, unserved rope. As the larger sizes of these ordinary open thimbles are often required to accommodate served rope also, their grooves have been designed accordingly.

A-3 In certain designs of slings, the use of thimbles of a size larger than the nominal size is specified. However, this is not intended to prohibit the use of the large-sized thimble, on which the score (rope groove) has been closed into approximate to the diameter of the rope.

A-4 Solid thimbles made of cast iron are in common use for the inner or drum end of crane ropes and for standing wire ropes. Although adequate in strength, cast iron is not regarded as a suitable material for thimbles subject to a live load. The flanges of cast iron solid thimbles fail frequently due to rough usage in handling, transport, and service. For these reasons, solid thimbles made of cast iron have been excluded from this standard.

A-5 Since solid thimbles provide a compact terminal end connection, free from excessive lateral movement, it will be realized that a hole, much larger than the bolt, does not achieve the objective. It is, therefore, incumbent on the purchaser to specify the diameter, if hole smaller than that given in **3.3** is required.

A-6 Thimbles for use on sling legs made of the doubled part of the rope, that is, rope spliced endless, or as a grommet, should be two or three sizes larger than the nominal size of the rope.

ANNEX B
(Foreword)

COMMITTEE COMPOSITION

Wire Ropes and Wire Products Sectional Committee, MED 10

<i>Organization</i>	<i>Representative(s)</i>
Directorate General of Ministry Safety, Dhanbad	SHRI D. B. NAIK (Chairperson) SHRI VIJAY BARAPATRE (<i>Alternate</i>)
Bharat Coking Coal Limited, Dhanbad	SHRI P. K. SINHA SHRI R. K. MUNSHI (<i>Alternate</i>)
Bharat Wire Ropes Limited, Mumbai	SHRI MAHENDER SINGH ARORA SHRI MAYANK MITTAL (<i>Alternate</i>)
Central Institute of Mining and Fuel Research, Dhanbad	DR MANOJ KUMAR SINGH DR DEBASISH BASAK (<i>Alternate</i>)
Directorate General of Quality Assurance, New Delhi	COL K. SURESH LT COL JA VORA (<i>Alternate</i>)
Directorate General FAC Advice Service and Lab Institute, Mumbai	SHRI B. N. JHA SHRI AMIT GOLA (<i>Alternate</i>)
Directorate General of Aeronautical Quality Assurance, New Delhi	SHRI SANTOSH INGOLE
Eastern Coalfields Limited, Kolkata	DR MANAS KUMAR
Hindustan Zinc Limited, Dariba	SHRI RAKESH SINGHVI SHRI SUFAL MEHROTRA (<i>Alternate</i>)
Maccaferri Environment Solutions Pvt. Limited, Navi Mumbai	SHRIMATI MINIMOL KORULLA SHRI RUDRA BUDDHABHATTI (<i>Alternate</i>)
Manganese Ore Limited, Nagpur	SHRI S. C. RAI SHRI ATUL SHARMA (<i>Alternate</i>) SHRI ASHWINI BAGHELE (<i>Alternate II</i>) SHRI RUDRA BUDHBHATTI (<i>Alternate III</i>)
Ministry of Shipping, New Delhi	SHRI ANIL PRUTHI SHRI RAMJI SINGH (<i>Alternate</i>)
Nanda and Miller Co., Kolkata	SHRI J. P. GOENKA
National Test House, Kolkata	SHRI SURESH PARWAL SHRI ANGAD VERMA (<i>Alternate</i>)
Oil and Natural Gas Commission, New Delhi	SHRI RAKESH KUMAR SRIVASTAVA SHRI RITUJIT HAZARIKA (<i>Alternate</i>)
Orient Wire Ropes, Indore	SHRI SAMEER GOLWELKAR SHRI SHISHIR AKARTE (<i>Alternate</i>)
South Eastern coalfields Limited, Bilaspur	SHRI KAPIL K. RAI SHRI D. BHATTACHARJEE (<i>Alternate</i>)
Tata Steel Limited, Dhanbad	SHRI SOUMENDU MAJHI
The Shipping Corporation of India Limited, Mumbai	SHRI G. S. BHALLA CAPT R. MODI (<i>Alternate</i>)

<i>Organization</i>	<i>Representative(s)</i>
Usha Martin Industries Limited, Ranchi	SHRI SUBRATA DUTTA SHRI SANDEEP JAISWAL (<i>Alternate</i>)
BIS Directorate General	SHRI RAJNEESH KHOSLA, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (MECHANICAL ENGINEERING) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]
<i>Member Secretary</i> SHRI SANDEEP KESHAV SCIENTIST 'C'/DEPUTY DIRECTOR (MECHANICAL ENGINEERING), BIS	

Bureau of Indian Standards

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website- www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

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